

DEPARTMENT OF AGRICULTURE, BENGAL.

ANNUAL REPORT

OF THE

CHINSURAH AGRICULTURAL STATION

FOR THE YEAR 1910-1911



CALCUTTA:

BENGAL SECRETARIAT BOOK DEPÔT.

1912.

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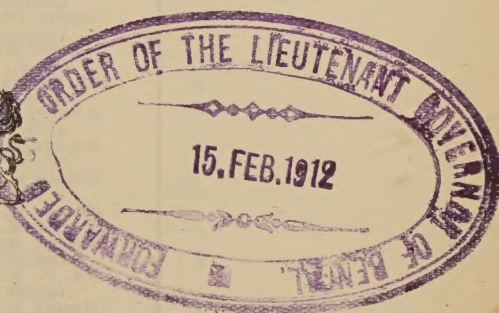
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ANNUAL REPORT OF THE CHINSURAH AGRICULTURAL EXPERIMENTAL STATION FOR THE YEAR 1910-11.

Soil and situation.—This station was established in 1908 and consists of about 200 acres close to the Hooghly river—latitude about 23° and at an elevation of about 40 feet above sea-level.

The soil is a clay loam, typical of much of the upper part of the Ganges delta and capable of growing good crops of rice and jute.

Season.—The rainfall was about 10 inches below normal, being particularly deficient in May, June and July. Jute did not suffer much, but the transplantation of paddy had to be postponed till the end of August when it was done under adverse circumstances.

Table I shows the number of rainy days and the total fall for each month.

TABLE I.

Rainfall.

Month.	Rainfall as registered at the Farm, 1910-11.	Number of rainy days.
April ...	1.74	4
May ...	3.92	5
June ...	6.11	17
July ...	7.42	17
August ...	9.82	21
September ...	7.88	16
October ...	8.01	12
November ...	Nil.	Nil.
December ...	Nil.	Nil.
January ...	0.31	1
February ...	0.13	1
March ...	2.80	7
Total ...	48.14	101
Average for this district ...	58.03	

Insect pests.—Jute, *dhaincha* and cotton were attacked by the Bihar hairy caterpillars in September, about half an acre of *dhaincha* being completely destroyed and the cotton being severely damaged.

Cropping.—The principal crops grown were jute, *aus* paddy, *aman* paddy, sugarcane, cotton and potatos.

Jute.—Manurial experiments on jute included plots treated with—

1. No manure.
2. Cowdung.
3. Castor cake.
4. Cowdung, superphosphate and saltpetre.
5. Muriate of potash.
6. Superphosphate and sulphate of ammonia.
7. Superphosphate sulphate of ammonia and muriate of potash.

The last three were represented by two sets of plots; the second receiving double the quantity of manures given to the first.

The results have been recorded for future use. They show that the land was capable of producing a very good crop without manure. Potash produced no apparent effect, but the saltpetre and sulphate of ammonia appeared to increase the crop considerably.

As superphosphate was not tried by itself, its effect was not tested.

Having regard to the nature of the soil, it is exceedingly probable that green manuring will have more effect than any other economically possible system, and the object should probably be to maintain the fertility of the soil by a conservative rotation, including green manuring for paddy, or for a valuable *rabi* crop like linseed, to be followed by jute. The exact value of nitrogen applied in a readily available form, such as sulphate of ammonia, might, after some years' experiments, be tabulated for different prices of jute, so that these expensive nitrogenous manures might be used on the growing crop when prices and the preliminary forecast appeared to justify it. The potash was tried at the request of Messrs. Schrdöer Smidt & Co., but it is probably waste of time experimenting with potash on such a heavy soil. Having regard to the relative cheapness of bones which provide a considerable amount of nitrogen and organic matter, they are likely, to be more economical on this soil than superphosphate, but in view of the failure of bonemeal to increase the yield of jute at Burdwan where it has a very great effect on paddy, it is doubtful whether it is worth experimenting with the application of phosphates of any kind to jute; and the question of omitting this constituent will be considered.

Jute varieties.—Several varieties of jute that have given good results at Burdwan, were grown, but as the seed was received rather late in the season no definite results were secured.

Experience has shown that these so-called varieties are not pure types, but mixtures, and experiments in the future should probably be conducted with the seed of pure types isolated by single plant selection on the farm or elsewhere.

Aus paddy.—Manurial and variety experiments with *aus* paddy failed on account of the low rainfall in the early part of the season. Seed obtained from Italy did not germinate.

Aman paddy.—Table 2 (or II) shows the outturn from the *aman* paddy manurial plots in 1909 and 1910. The land on which these plots are situated slopes from north to south, and to discount any possible effect of this, duplicate plots were laid out serially, in parallel lines, in reverse order. The results were, however, very fairly consistent, and the average yield of the duplicate plots are shown in the table.

TABLE II.

Manurial Experiment—Aman paddy.

No.	Plot.	1909.		1910.	
		Grain.	Straw.	Grain.	Straw.
		Mds. s.	Mds. s.	Mds. s.	Mds. s.
1	Unmanured ...	27 4	36 3	14 10	16 4
	Mds. ...				
2	Cowdung 50 ...	28 10	38 28	18 12	21 19
3	Do. 100 ..	31 16	47 35	18 4	20 17
4	Do. 50 ...				
	Superphos 3 ...				
	Saltpetre 1 ...	33 3	52 8	18 20	23 32
5	Bonemeal 3 ...				
	Saltpetre 1 ...	30 11	50 3	17 9	23 6
6	Green manure Dhaincha	26 7	34 7	21 9	26 9
7	Green manure Sun-hemp.	24 19	30 23	26 39	30 1
8	Unmanured ...	30 3	42 9	13 33	21 24

As usual, with paddy, the annual difference in outturn due to variation in rainfall is greater than that due to most of the manures,

which shows the importance of controlling the water by systematic embankment.

Clearly, the land was in variably good condition in the first year, but in the second year the manures had a decided effect, and by neglecting the first year's figure, some conclusions can be drawn.

As on other farms in the province, good results were obtained from green manuring and from 50 maunds of cowdung, and an addition of a second 50 maunds had no appreciable effect.

The scheme of experiments would probably be improved by omitting the cowdung and superphosphate on plot 4, thus making a strict comparison with plot 5 possible, and at the same time testing the value of a nitrogenous salt by itself on this soil. An experiment specially designed to determine the value of such manures failed, owing to the total submergence of the plots on which it was tried, and it therefore seems advisable to include it on these higher plots where the risk of submergence is less. The experiment with castor cake, which was also tried on one of the submerged plots, might be substituted in this series for the 100 maunds of cowdung which is apparently an excessive amount. These alterations will be considered.

Aman paddy varieties.—Nine varieties were tried both in 1909 and 1910, but the differences between the outturns of different plots were not sufficient in 1909 to base conclusions on, while in 1910 the yields were so low as to be valueless for comparison. Badshabhog appeared to be the most reliable variety of those that were tried.

In order to dwarf any pre-existing difference in the fertility of the plots, the application of 50 maunds of cowdung per acre to each of the plots devoted to variety experiments is advisable.

Aman paddy—Plough experiments.—Experiments with four different ploughs were carried out in 1909 and 1910. The same plough was used in the same plot throughout in preparing the land, and the same variety of paddy, Nagra, transplanted in them. The differences are so slight that they may be due to mere individual variations in plots. In fact, the advantage in using one or other kind of plough lies probably rather in the relative amount of labour necessary to obtain any required result than in the effect, if any, of the particular kind of plough on the fertility of the land.

Aman paddy—Seedling experiment.—The object of this experiment is to ascertain how many seedlings ought to be transplanted per hole. Practice ranges from transplanting 1 to 18 seedlings per hole. Transplanting one seedling per hole has given the highest outturn in many

on the variety, the fertility of the soil, and other circumstances,—particularly the time of sowing.

TABLE IV.

Broadcasting experiments—Aman paddy.

Crop,	Particulars.	Outturn per acre, 1909-10.			Outturn per acre, 1910-11.		
		Mds. s. ch.			Mds. s. ch.		
<i>Aman paddy—Nagra.</i>	(1) 30 lbs. seed ...	{ 14	16	4	10	28	12
		{ 16	26	4	34	2	6
	Duplicate ...	{ 15	32	8	6	10	0
		{ 21	22	8	16	38	12
	(2) 40 lbs. seed ...	{ 15	35	0	7	22	8
		{ 17	29	1	16	31	14
	Duplicate ...	{ 16	25	0	7	15	0
		{ 21	21	4	11	12	8

Sugarcane—Manurial experiment.—The results of manurial experiments on sugarcane are shewn in table V. The poor outturn was due to difficulties in irrigation, and to smut, and though the nitrogenous manures apparently increased the outturn, the experiment was economically, quite inconclusive

TABLE V.

Manurial experiments—Sugarcane.

Crop.	Particulars.	Outturn per acre, 1910-11— <i>Gur.</i>		
		Mds. s. ch.		
<i>Sugarcane—Khari</i>	(1) 100 maunds cowdung, 2 maunds sulphate of ammonia, 2 maunds sulphate of potash, 3 maunds super.	41	14	6
	(2) 100 maunds cowdung, 2 maunds sulphate of ammonia, 3 maunds super.	40	2	13
	(3) 100 maunds cowdung, 2 maunds sulphate of potash.	30	25	5
	(4) 100 maunds cowdung, 3 maunds super.	30	1	4
	(5) 100 maunds cowdung, 3 maunds super, 2 maunds saltpetre.	35	30	15

Potatos—Variety and manurial experiments were tried with potatoes, but owing probably to unsuitability of the land the outturn was poor and the crop in no case did more than pay for the seed. It is apparently useless to attempt to grow potatoes for sale, unless owing to peculiarly favourable circumstances a large crop can be relied upon which will pay for the great outlay necessary for seed.

Cotton.—"Buri" and Cambodian cotton were tried and gave 546 and 310 lbs., respectively, of seed cotton. Other varieties failed entirely. There is probably no chance of cotton being of any value as a crop in the Ganges Delta, but the experiment furnished further evidence of the adaptability of "Buri" cotton.

The station is in the immediate charge of Babu Tara Nath Roy, who supplied the material on which this report is based.

A. C. DOBBS.

